

### **REMARKS**

Applicants have considered the Final Office Action mailed July 8, 2004 in connection with the above-identified patent application.

#### **Amendments to the Specification**

Applicants have amended the specification in various places to correct typographical errors that would be apparent as such to one of ordinary skill in the art. Accordingly, no new matter is introduced by way of these amendments, and entry thereof is respectfully requested.

#### **Amendments to the Claims**

Claims 1–9, 11–15, 17–33, 35, 38–75, and 77–134 are pending in the instant Application. With the instant amendment, Applicants have amended claims 1–9, 11–14, 17, 18, 20, 21, 23, 35, 33, 39, 40, 42, 44, 51–53, 60, 61, 63, 65, 73–75, 77, 79, 81, 89, 90, 104, 121, 123, 125, and 127–134, and introduced new claims 135–143.

Applicants have amended claims 1, 20, 39, 60, 75, 121, 123, and 125 to recite a “capillary electrophoresis probe” in respect of the vinylogous carboxylic acid compounds recited in those claims. Support for this amendment can be found throughout the specification as filed (see, *e.g.*, page 6, line 12).

Claims 1, 20, 39, 60, 75, 121, 123, and 125 have been further amended to recite, in the alternative, a vinylogous carboxylic acid compound, or derivative thereof. Such amendments find support in the specification as filed at, *e.g.*, pages 6 – 11.

Claims 2–9, and 11–13 have been amended to correct instances of the term “compounds”.

Claims 2, 21, 40, 61, and 77 have been amended to recite that the vinylogous carboxylic acid compound possesses linear conjugation. Support for such amendments can be found in the specification as filed at, *e.g.*, page 7, lines 1–2.

Claims 4, 6, 23, 25, 42, 44, 63, 65, 79, and 81 have been amended to recite that the vinylogous carboxylic acid compound is an aromatic compound that possesses conjugation involving a stabilized resonance structure. Such amendments find support in the specification as filed at, *e.g.*, page 7, lines 2–5.

Claims 14 and 33 are amended to provide antecedent basis for the term “UV-chromophore”.

Claims 15, 19, and 57 have been amended to add further to the recited Markush group of ions, “any combination thereof.” Support can be found in the specification as filed at, *e.g.*, Table 1 on page 15, wherein it is stated that ion analysis is performed with a mixture of dissolved salts.

Claims 17, 18, 52, 53, 73, 74, 89 and 90 have been amended to use proper antecedent basis for the term “derivative”.

Applicants have amended Claim 51 to correct the preamble.

Claims 60 and 123 have been amended to insert a semi-colon after “region”.

Claim 104 has been amended to depend from claim 103.

The preambles of claims 127 and 128 have been amended to recite a “background electrolyte”.

Claims 129 – 134 have been amended to use proper antecedent basis for the terms “ester” and “amide” where they occur therein.

New claims 135 – 150 have been added to recite a background electrolyte solution for detecting small molecular weight ions using capillary electrophoresis.

New claims 151 – 158 have been added to recite a method of detecting small molecular weight ions using capillary electrophoresis.

New claims 159 – 166 have been added to recite a capillary electrophoresis apparatus for indirectly detecting small molecular weight ions in a sample.

New claims 167 – 174 have been added to recite a kit for detecting small molecular weight ions using capillary electrophoresis.

In each of claims 135 – 174, the recited probe has an electrophoretic mobility comparable to the ions. Support for each of the claims can be found in the specification and original claims as filed, for example at page 12, lines 10–15, and page 12, lines 5–7.

Applicants have also added new claims 175–178. Claims 175 and 176 recite concentrations of the ions found in the specification as filed at, respectively, page 14, line 25, and in Table 1 on page 15. Claims 177 and 178 recite limitations of the UV absorptivity of the vinylogous carboxylic acid compounds, as found in the specification as filed at page 12, line 22, and page 18, Table 4.

Accordingly, no new matter is introduced by the claim Amendments presented herein, and entry thereof is respectfully requested.

### **FORMALITIES**

In preliminary comments on pages 2 – 5 of the Office Action, mailed July 8, 2004, the Examiner has set forth comments in support of the rejection. In particular, the Examiner has suggested that “[t]he definition [of vinylogous carboxylic acid compounds] adopted by Applicant includes significantly more complex compounds than those disclosed by either Perez *et al.*, and [sic] Applicant” and that “it would not be readily apparent from [Applicants’] disclosure that such compounds would function in the desired manner.” Applicants expect that the amendments and discussion herein fully address the Examiner’s concerns.

Furthermore, although not formally articulated as either an objection or a rejection of the claims, the Examiner has suggested, in connection with discussing the definition of vinylogous carboxylic acid compounds, that “[t]he compounds encompassed by claim 1 are not so limited until claim 2” (Comments, page 4 of Office Action, mailed July 8, 2004). With the amendments herein, Applicants have amended claims 2, 4, 6, 21, 23, 25, 40, 42, 44, 61, 63, 65, 77, 79, and 81, to recite, either compounds whose structures contain “linear conjugation”, or aromatic compounds. Since each claim recites a particular category of vinylogous carboxylic acid compounds, the scope of each respective claim is different from the claim from which it depends. Accordingly, Applicants believe that the Examiner’s concerns have been addressed.

### **Objections to the Claims**

In item 5 of the Office Action dated July 8, 2004, the Examiner objected to claims 17, 18, 52, 53, 74, 89, 90, and 127–134 under 37 C.F.R. § 1.75(c) for being of improper dependent form for failing to further limit the subject matter of a previous claim.

With the instant amendment, the claims from which claims 17, 18, 52, 53, 74, 89, 90, and 127–134 respectively depend have been amended to recite a “vinylogous carboxylic acid compound, or derivative thereof”. Accordingly, the claims that the Examiner has objected to as improper now limit properties of a derivative recited in the claim from which they depend, and thus are of proper dependent form.

The Examiner has also objected to claims 2–9, 11–13, 51, 104, 127, and 128 for various informalities. It is believed that with the amendments presented herein and described hereinabove, Applicants have attended to these objections.

## REJECTIONS OF THE CLAIMS

### Rejections under 35 U.S.C. § 112 (¶ 1)

#### *The alleged lack of fully enabled scope*

The Examiner has rejected claims 1–9, 11–15, 17–33, 35, 38–75, and 77–134 under 35 U.S.C. § 112 (first paragraph) because the specification allegedly does not provide enablement for any vinylogous carboxylic acid compound. Applicants respectfully traverse the rejection.

First, the Examiner has alleged that the scope of the claims exceeds that of the disclosure because, according to the Examiner, only those vinylogous carboxylic acid compounds as defined in the specification are properly enabled. Specifically, the Examiner has alleged that “[w]hile satisfying the general definition of a vinylogous carboxylic acid compound, complex compounds ... would not have the same properties as the simpler compounds disclosed” and that “one skilled in the art would not be enabled to use any compound fitting the definition.” (Office Action, July 8, 2004, at page 9.)

In this regard, Applicants point out that rejected claims 1, 20, 39, 60, 75, 121, 123, and 125, as amended herein, all recite a “capillary electrophoresis probe”. Applicants believe that the specification as filed sets forth properties of vinylogous carboxylic acid compounds that render them useful as capillary electrophoresis probes. Specifically, such properties include “mobilities that are comparable to the analytes of interest” (Specification as filed, page 12, lines 5–7). Accordingly, one of ordinary skill in the art would appreciate from Applicants’ specification that only vinylogous carboxylic acids having properties that make them suitable as probes for capillary electrophoresis fall within the scope of Applicants’ claims, as amended herein.

The Examiner has additionally questioned Applicants’ use of the terms “ester derivative” or “amide derivative” of vinylogous carboxylic acid compounds in, *e.g.*, claims 17 and 18. As discussed in Applicants’ response mailed May 12, 2004, Applicants have amended the pertinent claims herein to specify an “enol” ester (or amide) derivative. Accordingly, Applicants believe that such amendments remove any perceived indefiniteness from the claims.

Accordingly, Applicants respectfully submit that claims 1–9, 11–15, 17–33, 35, 38–75, and 77–134 as amended herein are properly enabled by the specification as filed and request that the Examiner withdraw the rejection of record.

*The alleged lack of written description*

The Examiner has also rejected claims 1–9, 11–15, 17–19, 35, 91, 92, 94–97, and 121–128 under 35 U.S.C. § 112 (first paragraph) for allegedly failing to comply with the written description requirement. Applicants respectfully traverse the rejection.

Specifically, the Examiner has alleged that “the express exclusion of tropolone [from the rejected claims] is not supported by the original disclosure and is new matter”. In rebuttal, Applicants respectfully submit that the claims have been amended in a manner consistent with established practice. See, *e.g.*, MPEP § 2173.05(i) (“[i]f alternative elements are positively recited in the specification, they may be explicitly excluded in the claims”).

The claims in question have been previously amended to recite that the vinylogous carboxylic acid compound is not tropolone. Since tropolone is a species disclosed by Applicants in the specification as filed (see, *e.g.*, page 8), Applicants are at liberty to exclude it from their claims. See *In re Johnson*, 558 F.2d. 1008, 1010, 194 USPQ 187, 196 (CCPA, 1977) (“[the] specification, having described the whole, necessarily described the part remaining.”).

Accordingly, Applicants respectfully submit that claims 1–9, 11–15, 17–19, 35, 91, 92, 94–97, and 121–128 as amended, find support in the specification as filed, and respectfully request that the rejection thereof under 35 U.S.C. § 112 (first paragraph) be withdrawn.

**Rejections under 35 U.S.C. § 112 (¶ 2)**

The Examiner has rejected claims 14, 17–19, 33, 52, 53, 57, 73, 74, 89, 90 and 104 under 35 U.S.C. § 112 (second paragraph) as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicants have amended claims 14, 17–19, 33, 52, 53, 57, 73, 74, 89, 90 and 104, herein, and believe that the rejections are now moot.

In particular, claims 14 and 33 [sic] have been amended herein to recite a proper antecedent basis for the UV-chromophore.

In respect of claims 17–19, 52, 53, 57, 73, 74, 89, 90 and 104, the Examiner’s attention is drawn to remarks presented hereinabove in connection with various objections to the claims. The claims from which the rejected claims depend now recite, separately, vinylogous carboxylic acid compounds, and derivatives thereof. The rejected claims now

recite examples of derivatives of vinylogous carboxylic acid compounds, and, accordingly, neither lack antecedent basis nor definiteness.

Accordingly, Applicants respectfully request that the rejections under 35 U.S.C. § 112 (second paragraph) be withdrawn.

### **Rejections under 35 U.S.C. § 102(b)**

#### *The rejection over Fukushi*

Examiner has rejected claims 20–22, 32, 33, 35, 60–62, 72, 75, 77, 78, 88, 91, 106, 114, 123, and 125 under 35 U.S.C. § 102(b) as allegedly being anticipated by Fukushi *et al.*, *J. Chromatog. A*, 772: 313-320 (1997). Applicants respectfully traverse the rejection because Fukushi does not teach all of the elements recited in Applicants' claims..

“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Additionally, “[t]he identical invention must be shown in as complete detail as is contained in the ... claim.” *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). Applicants respectfully point out that Fukushi neither teaches each and every element of Applicants' claims, nor describes Applicants' invention in complete detail.

Claims 20–22, 32, 33, 35 and 91 recite a background electrolyte for indirect detection of ions in a sample using capillary electrophoresis. Claims 60–62, 72, 75, 77, 78, 88, 106, 114, 123, and 125 recite, variously, an apparatus or a kit for performing indirect detection of ions by capillary electrophoresis. As described in Applicants' specification as filed, when using a probe, the “UV transparent analyte is detected by displacement of the probe by the analyte.” Specification as filed, page 2, lines 20–21. Thus, in indirect detection, it is not the ions in the sample that are measured, but instead the molecules of the probe.

By contrast, Fukushi discloses a method of directly determining ascorbic acid in vegetables by capillary zone electrophoresis. Thus, rather than using a vinylogous carboxylic acid as a probe, Fukushi is teaching a method of direct determination of ascorbic acid from assorted samples. That is, in Fukushi, ascorbic acid is the analyte (see, *e.g.*, Fukushi, section 3.4, page 318) and not a probe.

Accordingly, because Fukushi does not teach indirect methods of detection of ions in a sample using a probe, Fukushi cannot anticipate any of the rejected claims and Applicants respectfully request that the rejection over Fukushi be withdrawn.

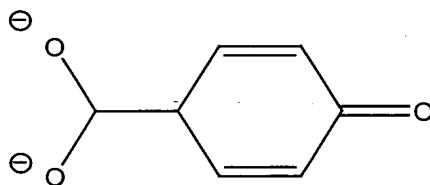
*The rejection over U.S. Patent 5,366,601, to Jones, et al.*

Examiner has rejected claims 121, 123, and 125 under 35 U.S.C. § 102(b) as allegedly being anticipated by U.S. Patent No. 5,366,601 to Jones, *et al.* (“the ’601 patent”).

Applicants respectfully traverse the rejection because the ’601 patent does not teach a vinylogous carboxylic acid.

Jones teaches ion separation by capillary electrophoresis, in which ion detection is accomplished through indirect UV detection and the use of an electrolyte containing an aromatic carboxylate such as phthalate, trimesate, benzenetetracarboxylate, p-hydroxybenzoate, and p-anisate. (The ’601 patent, Col. 6, lines 44–51). However, none of these aromatic carboxylates is a vinylogous carboxylic acid, according to Applicants’ definition.

First, none of the aromatic carboxylic acids in the ’601 patent admits of a stabilized resonance structure that is a vinylogous carboxylic acid. As discussed in Applicants’ specification (see page 7, lines 2 – 7), “[w]hen conjugation occurs through either an aromatic system or a hetero aromatic system, suitable compounds ... will produce stabilized resonance structures.” For example, in respect of p-hydroxybenzoate, highlighted by the Examiner, the only possible resonance structure would be:



Such a structure, having two negatively charged oxygen atoms bonded to a common carbon atom, is not a plausible canonical form that could stabilize a vinylogous form of the structure.

Second, it is noted that a vinylogous carboxylic acid moiety does not arise from a carboxylic acid moiety and a hydroxyl group in conjugation. This is because it is the hydroxyl function that exhibits acidic behaviour – because after losing a proton its anion is stabilized by conjugation with the carbonyl group. It is conjugation between a hydroxyl group and a carbonyl group, not with a carboxylic acid group, that provides a vinylogous

carboxylic acid function. A compound that contains a carboxylic acid group is (of course) a carboxylic acid and, without more, does not possess the special combination of groups deserving of the term “vinyllogous carboxylic acid”. Thus, for this reason also, the aromatic carboxylic acids in the '601 patent are not vinyllogous carboxylic acid compounds.

Accordingly, Applicants respectfully request withdrawal of the rejection under 35 U.S.C. § 102(b) of claims 121, 123, and 125 over the '601 patent.

### **Rejections under 35 U.S.C. § 103**

The U.S. Patent and Trademark Office (“PTO”) bears the burden of establishing a *prima facie* case of obviousness. *In re Bell*, 26 USPQ2d 1529 (Fed. Cir. 1993). To establish a *prima facie* case, the PTO must satisfy three basic criteria. First, the prior art reference, or references when combined, must teach or suggest each and every limitation of the claimed invention. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). Second, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify or combine the reference teachings in the manner suggested by the PTO. *In re Rouffet*, 149 F.3d 1350, 47 USPQ2d 1453 (Fed. Cir. 1998). Finally, the skilled artisan, in light of the teachings of the prior art, must have a reasonable expectation that the modification or combination suggested by the PTO would be successful. *In re Merck & Co., Inc.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). The teaching or suggestion to make the claimed invention and the reasonable expectation of success must both be found in the prior art, not in the Applicant’s disclosure. *In re Vaeck*, 20 USPQ2d 1438 (Fed. Cir. 1991). If any one of these criteria is not met, *prima facie* obviousness is not established.

#### *The rejection over Fukushima*

The Examiner has rejected claims 1–3, 13–15, 19, 38, 105, 113, 124, and 126, under 35 U.S.C. § 103(a) as allegedly being obvious over Fukushima. Applicants respectfully traverse the rejection on the grounds that the Examiner has not made out a *prima facie* case of obviousness.

The principal teachings of Fukushima have been discussed hereinabove in connection with rejections issued under 35 U.S.C. § 102(b). Although Fukushima does not provide concentrations of ascorbic acid that are within the range of 2 – 5 mM as recited in Applicants’ claims, the Examiner has asserted that Fukushima teaches dilution of ascorbic acid solutions and, therefore, that Applicants’ claims are obvious over Fukushima.



Applicants respectfully disagree with the grounds for rejection. First, as discussed hereinabove, Fukushima teaches determination of ascorbic acid by capillary electrophoresis by *direct* means. Thus, Fukushima does not teach that ascorbic acid is a capillary electrophoresis probe. By contrast, claims 1–3, 13–15, 19, 38, 105, 113, 124, and 126 as amended herein recite a capillary electrophoresis probe. Accordingly, Fukushima does not teach or disclose every element of Applicants' claims. The Examiner has not identified sources of the missing teachings in the art.

Second, the concentration of vinyllogous carboxylic acid recited in Applicants' claims is established for the purpose of providing a detectable signal that exhibits measurable fluctuations when the vinyllogous carboxylic acid displaces an ion in the sample. (See, *e.g.*, specification as filed, page 2, line 22, – page 3, line 13.) In Fukushima, however, variations in concentration of ascorbic acid are either those naturally occurring in the various samples that are being analyzed (*e.g.*, Fukushima, table 3, p.318) or are varied manually for the purpose of establishing controls (*e.g.*, Fukushima, table 2, p.318). Neither of these reasons – without more – provides a motivation to vary the concentrations of ascorbic acid to those recited by Applicants.

Accordingly, Applicants respectfully submit that claims 1–3, 13–15, 19, 38, 105, 113, 124, and 126 are not obvious over Fukushima, and request that the rejection be withdrawn.

*The rejection over U.S. Patent No. 5,366,601 to Jones, et al.*

The Examiner has rejected claims 1–4, 14, 15, 19, 91, 92, 94, 95, 122, 124, and 126 under 35 U.S.C. § 103(a) as allegedly being obvious over the '601 patent. Applicants respectfully traverse the rejection.

The principal teachings of the '601 patent have been discussed hereinabove in connection with rejections issued under 35 U.S.C. § 102(b). Although the '601 patent does not provide concentrations of carboxylic acids such as p-hydroxy benzoic acid that are within the range of 2 – 5 mM as recited in Applicants' claims, the Examiner has asserted that dilution of solutions of such carboxylic acids would be within the capability of one of ordinary skill in the art, and, therefore, that Applicants' claims are obvious over the '601 patent.

However, as discussed hereinabove, the '601 patent does not disclose a vinyllogous carboxylic acid according to Applicants' definition and the definition accepted by the Examiner. Accordingly, the teachings of the '601 patent alone cannot render Applicants'

claimed invention obvious, and Applicants respectfully submit that the Examiner has not made out a *prima facie* case of obviousness.

Therefore Applicants respectfully submit that none of claims 1–4, 14, 15, 19, 91, 92, 94, 95, 122, 124, and 126 is obvious over the '601 patent, and request that the rejection be withdrawn.

*The rejection over the '601 patent in view of Allinger*

The Examiner has rejected claims 5–9, 11–13, 17, 18, 127, and 128 under 35 U.S.C. § 103(a) as allegedly being obvious over the '601 patent in view of Allinger, *et al.* (“Chromophoric Groups” and “Conjugated Systems”, *Organic Chemistry*, 2nd Ed., pp. 764–768, (1976)), (“Allinger”). Applicants respectfully traverse the rejection.

The Examiner bases his rejection upon the alleged teachings of the '601 patent discussed hereinabove and further upon his allegation that one of ordinary skill in the art in possession of the teachings of Allinger would have been motivated to “substitute the claimed compounds for the compounds taught by Jones *et al.* [the '601 patent] because the selection of a known material based on its suitability for its intended use supports a *prima facie* obviousness determination”, citing to MPEP § 2144.07. Applicants again respectfully disagree.

First, the ‘art-recognized suitability’ of a compound referred to by the Examiner can only apply when the compound and its properties are themselves explicitly taught in the art. The Examiner has not made such a showing.

Second, Applicants respectfully remind the Examiner that to establish a *prima facie* case of obviousness, all of the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). In the instant situation, the rejected claims recite a subgenus of vinyllogous carboxylic acid compounds or particular species of vinyllogous carboxylic acid compounds. As discussed hereinabove, the '601 patent does not teach use of vinyllogous carboxylic acid compounds but merely aromatic carboxylic acids. The missing teachings cannot be found in Allinger.

Allinger merely teaches, generally, that particular classes of compounds — those containing carbon-carbon double bonds and carbonyl groups, in conjugation, are highly UV absorbing. Such a teaching is not specific enough to point one of ordinary skill in the art to Applicants' vinyllogous carboxylic acids, and certainly does not have the specificity required to identify Applicants' claimed species. The Examiner is reminded that every element of the

rejected claims must be taught or suggested by the cited references. See, *e.g.*, MPEP § 2144.08 (citing to *Ochiai*, 71 F.3d at 1569-70, 37 USPQ2d at 1131; *Deuel*, 51 F.3d at 1557, 34 USPQ2d at 1214 (“[A] prima facie case of unpatentability requires that the teachings of the prior art suggest the claimed compounds to a person of ordinary skill in the art.” (emphasis in original)); *Jones*, 958 F.2d at 351, 21 USPQ2d at 1943-44 (Fed. Cir. 1992); *Dillon*, 919 F.2d at 692, 16 USPQ2d at 1901; *In re Lahu*, 747 F.2d 703, 705, 223 USPQ 1257, 1258 (Fed. Cir. 1984) (“The prior art must provide one of ordinary skill in the art the motivation to make the proposed molecular modifications needed to arrive at the claimed compound.”)) Neither the ’601 patent nor Allinger, alone or in combination, teaches Applicants’ claimed compounds with the specificity required by law.

Accordingly, Applicants respectfully submit that claims 5–9, 11–13, 17, 18, 127, and 128 are not obvious over a combination of Jones in view of Allinger, and request that the rejection be withdrawn.

*The rejection over the ’601 patent in view of Macka*

The Examiner has rejected claims 20–23, 35, 38–42, 54–56, 58–63, 75, 77–79, 93, 98–102, 105–110, and 113–118 under 35 U.S.C. § 103(a) as allegedly being obvious over the ’601 patent in view of Macka, *et al.*, *Anal. Chem.*, 70:743–749, (1998) (“Macka”). Applicants respectfully traverse the rejection.

The Examiner has alleged that, based upon the teachings of the ’601 patent discussed herein, one of ordinary skill in the art would have been motivated to use the teachings of Macka and to use a buffer in connection with Applicants’ claimed invention.

However, as has already been discussed with respect to previous rejections of record, the ’601 patent does not teach Applicants’ claimed vinylogous carboxylic acid compounds. Macka does not provide the teachings that are absent from the ’601 patent. In fact Macka only refers to a chromate background electrolyte — not even organic compounds — and certainly not vinylogous carboxylic acid compounds. Therefore, the combination of the ’601 patent and Macka fails to teach or disclose all of the limitations of the rejected claims.

Accordingly, Applicants respectfully submit that none of claims 20–23, 35, 38–42, 54–56, 58–63, 75, 77–79, 93, 98–102, 105–110, and 113–118 is obvious over the ’601 patent in view of Macka, and request that the rejection be withdrawn.

*The rejection over Oehrle in view of Jones*

The Examiner has rejected claims 20–23, 29, 32, 33, 35, 38–42, 48, 51, 54–63, 69, 72, 75, 77–79, 85, 88, 91, 94, 95, 98, 101, 102, 105, 106, 109, 110, 113, 114, 117, and 118 under 35 U.S.C. § 103(a) as allegedly being obvious over Oehrle in view of U.S. Patent No. 5,128,005 to Jones, *et al.*, (“Jones”). Applicants respectfully traverse the rejection.

The respective teachings of Oehrle and Jones have been discussed in Applicants’ response, mailed May 12, 2004. It is also to be stressed that Jones (as with the ’601 patent, also to Jones) does not explicitly teach vinylogous carboxylic acids. The Examiner acknowledges that Oehrle does not teach use of a buffer, an EOF modifier, or a pH within Applicants’ claimed range. The Examiner alleges that the teachings missing from Oehrle can be found in Jones, and, in particular, states that “[b]uffers are commonly used in chemical analysis” and that Jones teaches a method using capillary electrophoresis wherein the electrolyte comprises a buffer.

However, Applicants respectfully point out that, in order to sustain a finding of obviousness, the Examiner must identify both a motivation to combine the cited references to make the claimed invention, and a reasonable expectation of success. In the instant situation, Oehrle does not teach use of a buffer. Jones does not teach use of vinylogous carboxylic acid compounds. Accordingly, the references alone do not provide one of ordinary skill in the art with a motivation to combine their respective teachings and to use a buffer in combination with a vinylogous carboxylic acid compound. Nor do the references, in combination, provide one of ordinary skill in the art with a reasonable expectation of success that deploying a buffer in combination with the claimed vinylogous carboxylic acid compounds would be effective in capillary electrophoresis.

Accordingly, Applicants respectfully submit that none of claims 20–23, 29, 32, 33, 35, 38–42, 48, 51, 54–63, 69, 72, 75, 77–79, 85, 88, 91, 94, 95, 98, 101, 102, 105, 106, 109, 110, 113, 114, 117, and 118 is obvious over Oehrle in view of Jones, and request that the rejection be withdrawn.

*The rejection over Oehrle in view of Jones and Allinger*

The Examiner has rejected claims 24–28, 30, 31, 43–47, 49, 50, 52, 53, 64–68, 70, 71, 73, 74, 80–84, 86–90, 129–134 under 35 U.S.C. § 103(a) as allegedly being obvious over Oehrle in view of Jones, *et al.*, (U.S. Patent No. 5,128,005), and further in view of Allinger. Applicants respectfully traverse the rejection.

The Examiner acknowledges that Oehrle and Jones “do not disclose the other compounds recited in the instant claims”. However, the stated reasoning behind the rejection is that “[s]ince the claimed compounds are highly UV-absorbing, these compounds would be included within the class of compounds disclosed by Jones *et al.* as being of ‘practical interest’” and that “[o]ne skilled in the art would expect these compounds to have similar UV-absorptivities, mobilities and interactions as the compounds disclosed by Oehrle and Jones *et al.*”. Applicants again respectfully disagree.

In the instant situation, the rejected claims recite either a subgenus of vinylogous carboxylic acid compounds, or particular species thereof. As also discussed hereinabove, Oehrle teaches use of a single compound, tropolone. Jones teaches a number of organic compounds — including aromatic carboxylic acids — for use in capillary electrophoresis but does not teach use of vinylogous carboxylic acid compounds. Neither reference teaches one of ordinary skill in the art to modify the tropolone of Oehrle, or the aromatic carboxylic acids of Jones, to reach Applicants’ claimed vinylogous carboxylic acids. Such a teaching is not provided by Allinger.

Allinger merely teaches, generally, that particular classes of compounds — those containing carbon-carbon double bonds and carbonyl groups, in conjugation, are highly UV absorbing. Such a teaching is not specific enough to point one of ordinary skill in the art to Applicants’ vinylogous carboxylic acids (which have an enol group in conjugation with a carbonyl group), and certainly does not have the specificity required to identify Applicants’ claimed species, which are selected not just for their UV absorbing characteristics but for other properties such as mobility. The Examiner is reminded that every element of the rejected claims must be taught or suggested by the cited references. See, *e.g.*, MPEP § 2144.08. Neither Oehrle, Jones nor Allinger, alone or in combination, teaches Applicants’ claimed compounds with the specificity required by law.

The Examiner further alleges that one of ordinary skill in the art in possession of the teachings of Allinger would have been motivated to “substitute the claimed compounds for the compounds taught by Oehrle and Jones *et al.* because the selection of a known material based on its suitability for its intended use supports a *prima facie* obviousness determination”, citing to MPEP § 2144.07. However, the “art-recognized suitability” of a compound referred to by the Examiner can only apply when the compound and its properties are themselves explicitly taught in the cited art. As discussed hereinabove, the Examiner has not made such a showing.

Accordingly, Applicants respectfully submit that 24–28, 30, 31, 43–47, 49, 50, 52, 53, 64–68, 70, 71, 73, 74, 80–84, 86–90, 129–134 are not obvious over a combination of Oehrle and Jones in view of Allinger, and request that the rejection be withdrawn.

*The rejection over the '601 patent in view of Macka and Allinger*

The Examiner has rejected claims 24–31, 43–53, 64–74, 80–90, and 129–134 under 35 U.S.C. § 103(a) as allegedly being obvious over the '601 patent, in view of Macka, and further in view of Allinger. Applicants respectfully traverse the rejection.

Applicants respectfully remind the Examiner that to establish a *prima facie* case of obviousness, all of the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). In the instant situation, the rejected claims recite a subgenus of vinylogous carboxylic acid compounds or particular species of vinylogous carboxylic acid compounds. As discussed hereinabove, the '601 patent does not teach use of vinylogous carboxylic acid compounds, but merely aromatic carboxylic acids. The Examiner acknowledges that Macka and the '601 patent “do not disclose the other compounds recited in the instant claims”. As also discussed hereinabove, the teachings missing from the '601 patent are not provided by either Macka or Allinger. Allinger merely teaches, generally, that particular classes of compounds — those containing carbon-carbon double bonds and carbonyl groups, in conjugation — are highly UV absorbing. Such a teaching is not specific enough to point one of ordinary skill in the art to Applicants' vinylogous carboxylic acids, and certainly does not have the specificity required to identify Applicants' claimed species.

Accordingly, Applicants respectfully submit that claims 24–31, 43–53, 64–74, 80–90, and 129–134 under 35 are not obvious over a combination of Jones and Macka in view of Allinger, and request that the rejection be withdrawn.

*The rejection over the '601 patent in view of Vigh*

The Examiner has rejected claims 96 and 97 under 35 U.S.C. § 103(a) as allegedly being obvious over Jones (U.S. Patent No. 5,366,601), in view of U.S. Patent No. 6,511,850 to Vigh (“Vigh”). Applicants respectfully traverse the rejection.

The Examiner has alleged that, based upon the teachings of the '601 patent discussed herein, one of ordinary skill in the art would have been motivated to use the teachings of Vigh, and to use an organic solvent in connection with Applicants' claimed invention.

However, as has already been discussed with respect to previous rejections of record, the '601 patent does not teach Applicants' claimed vinylogous carboxylic acid compounds. Vigh does not provide the teachings that are absent from the '601 patent. In fact Vigh only refers to background electrolytes that are buffered solutions such as chromate, phosphate, acetate, borate or carbonate. Vigh does not vinylogous carboxylic acid compounds. Therefore, the combination of the '601 patent and Vigh fails to teach or disclose all of the limitations of the rejected claims.

Accordingly, Applicants respectfully submit that claims 96 and 97 are not obvious over the '601 patent in view of Vigh, and request that the rejection be withdrawn.

*The rejection over the '601 patent in view of Macka and Vigh*

The Examiner has rejected claims 103, 104, 111, 112, 119 and 120 under 35 U.S.C. § 103(a) as allegedly being obvious over the '601 patent, in view of Macka, and further in view of Vigh ("Vigh"). Applicants respectfully traverse the rejection.

The Examiner has alleged that, based upon the teachings of Jones and Macka discussed herein, one of ordinary skill in the art would have been motivated to use the teachings of Vigh, and to use an organic solvent in connection with Applicants' claimed invention.

However, as has already been discussed with respect to previous rejections of record, Jones does not teach Applicants' claimed vinylogous carboxylic acid compounds. As has been discussed hereinabove in connection with rejections of other claims, neither Macka nor Vigh provides the teachings that are absent from the '601 patent. Therefore, the combination of the '601 patent, Macka, and Vigh fails to teach or disclose all of the limitations of the rejected claims.

Accordingly, Applicants respectfully submit that claims 103, 104, 111, 112, 119 and 120 are not obvious over the '601 patent in view of Macka and Vigh, and respectfully request that the rejection be withdrawn.

### **CONCLUSION**

In view of the above remarks, Applicants respectfully submit that the subject application is in good and proper order for allowance. Withdrawal of the Examiner's rejections and early notification to this effect are earnestly solicited.

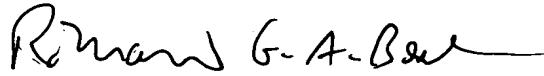
If, in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is encouraged to call the undersigned at (650) 843-7509.

No fee is believed owed in connection with filing of this amendment and response. However, should the Commissioner determine otherwise, the Commissioner is authorized to charge any underpayment or credit any overpayment to Morgan, Lewis & Bockius LLP Deposit Account No. 50-0310 (order no. 60825-5003) for the appropriate amount. A copy of this sheet is attached.

Respectfully submitted,

Date: November 8, 2004

By: \_\_\_\_\_



Richard G. A. Bone  
Limited Recognition Under 37 C.F.R. § 10.9(b)  
(Copy of Certificate attached hereto)

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